Azure Virtual Desktop Hybrid on Windows Server 2025 Datacenter with Lenovo ThinkAgile MX

Solution Brief

Many organizations built their desktops on Remote Desktop Services (RDS) and Windows Server session hosts. Modern VDI usually offers two unappealing paths: rebuild on single-session Windows 11 VMs, which multiplies compute per user, or move everything to cloud-hosted AVD and give up data residency and hardware you've already paid for. AVD Hybrid removes that tradeoff. It extends the AVD control plane (brokering, host pools, workspaces, and diagnostics) to session hosts that stay on your hardware and connect through Azure Arc.

Windows Server 2025 Datacenter is the target session host operating system in this design. One VM serves many users instead of one Windows 11 VM per person. Use eligible RDS Client Access Licenses (CALs) with active Software Assurance, or RDS User Subscription Licenses, and confirm user entitlement and AVD Hybrid service licensing with Microsoft. ThinkAgile MX650 V4, MX630 V4, and MX650a V4 give that density a validated, hyperconverged foundation, with a control plane your team never has to patch or run.

Business Challenge

Hybrid and remote work made virtual desktops permanent infrastructure. Organizations now have to balance where desktop compute lives against how much of the stack they run themselves. Four problems come up again and again:

- Cloud-only VDI doesn't fit every workload: Data residency, latency to local systems, existing hardware, or regulation keep some desktops tied to a site.
- Running a broker on-premises is costly: A self-managed broker and gateway tier means patching, scaling, and securing it yourself.
- Windows 11 single-session multiplies compute: One VM per concurrent user can take several times the compute and memory of a Windows Server RDSH deployment.
- Multi-session skills go unused: Teams that know Windows Server RDSH are pushed toward a per-VM, single-session model. IT shouldn't have to choose between cloud-managed desktops and the multi-session economics it already relies on.

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Solution

AVD Hybrid splits the control plane from the compute plane. The broker, host pools, workspaces, and diagnostics run in Azure, just as they do for cloud-hosted AVD. Session hosts run on your own hypervisor and register with Azure through Azure Arc. Session hosts connect out to the control plane over HTTPS on port 443, as Microsoft documents. Traffic outside the control plane, such as user connections, identity, and profile storage, can have different network requirements, so review Microsoft's network guidance and confirm whether a VPN or private connectivity fits your design.

On ThinkAgile MX, session hosts are Windows Server 2025 Datacenter VMs running the Remote Desktop Session Host (RDSH) role. Windows Server 2025 and Azure Local 24H2 are the supported versions for this design. Storage Spaces Direct (S2D) pools each node's NVMe drives for storage. We target Datacenter edition because its virtualization rights cover as many Windows Server VMs as a cluster needs on licensed hosts, which suits session hosts that come and go with demand.

Lenovo offers Windows Server 2025 Datacenter and RDS CALs with the node, subject to country and configuration (see the software table below). Use eligible RDS CALs with active Software Assurance, or RDS User Subscription Licenses. Confirm user entitlement and AVD Hybrid service licensing with Microsoft. The AVD Hybrid extension, deployed through Azure Arc, enables the RDSH role (install it first to avoid a one-time reboot) and joins the host to a cloud-managed host pool. Users connect with Windows App and never see where their desktop runs.

AVD Hybrid doesn't provision or power-manage session hosts. There's no autoscale or Start VM on Connect for on-premises hosts, so most teams add their own automation, PowerShell or Arc scripting, or a partner tool. AVD on Azure Local, covered below, closes part of that gap.

In the following sections, we take a deeper dive:

- Lenovo delivers one virtual desktop platform, sized to the user population
- One hardware family supports both access strategies
- Session host sizing
- Start with Windows Server HCI, migrate to AVD on Azure Local
- Software you can order with ThinkAgile MX
- Rapid delivery with Lenovo Top Choice Express

Lenovo delivers one virtual desktop platform, sized to the user population

Use the MX650 V4 for a dense headquarters cluster, the MX630 V4 for a compact branch or edge footprint running the same Windows Server 2025 Datacenter image, and the MX650a V4 where users need GPU acceleration. Mix all three in a hub-and-branch model, and every site registers to the same Azure-managed host pools and workspace.

One hardware family supports both access strategies

The cluster that runs Windows Server 2025 Datacenter RDSH today can run Windows 11 Enterprise single-session hosts for apps that aren't certified for multi-session, dedicated-session compliance rules, or graphics-heavy work. It's a role and image decision, not a hardware one, so IT keeps one node family, one firmware baseline, and one support relationship.

Session host sizing

A multi-session host is sized by concurrent users per vCPU, not VMs per user. On a hyperconverged cluster, compute, memory, and S2D capacity must be sized together, which is where the MX family does well:
Our planning basis uses Microsoft's session host sizing guidelines (6 light, 4 medium, or 2 heavy users per vCPU), one vCPU per core, a reserve of 4 to 6 cores per node for the host OS, Storage Spaces Direct, and

Azure Arc, and N+1 sizing. These are planning figures: validate them with the AVD Capacity Planner, a pilot, and Lenovo DCSC.

- MX650 V4 is the 2U, storage-dense node. The validated configuration has two Intel Xeon 6527P processors (24 cores each), 512GB of DDR5, and ten 7.68TB NVMe drives per node. That is 48 cores per node and about 120 vCPU of session hosts on four nodes, or roughly 480 to 720 users. It's built for clusters of four to sixteen nodes, with S2D capacity for session host VMs and FSLogix profiles in one cluster.
- MX630 V4 is the 1U, scale-out node. The validated configuration has two Intel Xeon 6517P processors (16 cores each), 256GB of DDR5, and four 7.68TB NVMe drives per node. That is 32 cores per node and about 24 vCPU on two nodes, or roughly 95 to 140 users. It suits branch and edge clusters of two to four nodes, and clusters of up to two nodes can be deployed remotely with ThinkAgile MX Remote Deployment.
- MX650a V4 is the GPU-ready 2U node: Intel Xeon 6 processors of up to 86 cores each, up to 32 DDR5 DIMMs, eight front drive bays for NVMe S2D storage, and room for up to four double-wide or eight single-wide GPUs. It serves CAD, medical imaging, and media users who would otherwise need dedicated workstations. Our representative sizing assumes two 32-core processors (64 cores per node), which gives about 290 heavy users on four nodes. That figure is CPU-bound, so check GPU models and options with your Lenovo representative before you size a GPU pool.

Lenovo XClarity Administrator and the XClarity Integrator for Microsoft System Center Virtual Machine Manager bring firmware and driver updates into the Hyper-V management plane at every site, and Rolling System Update helps reduce disruption to user sessions. Premier Support covers the hardware, and on Azure Local it includes integrated Level 1 and Level 2 software support through one contact. ThinkAgile MX nodes ship with drives Microsoft certifies for Storage Spaces Direct, so the storage under your session hosts and profiles is a Microsoft-supported configuration, not a build-your-own one.

Start with Windows Server HCI, migrate to AVD on Azure Local

You don't have to move to Azure Local on day one. ThinkAgile MX runs the same nodes two ways. Windows Server 2025 Datacenter hyperconverged infrastructure, built on Hyper-V failover clustering and Storage Spaces Direct, is a familiar starting point your team can run with the tools it knows. AVD on Azure Local (version 24H2) is the destination: the same hardware managed through Azure Arc, with session hosts added from the Azure portal using Azure Marketplace images. Your node family, drives, and Windows App experience stay the same.

- Start on Windows Server 2025 Datacenter HCI: Hyper-V and Storage Spaces Direct on Microsoft-certified MX drives, managed with Windows Admin Center, failover clustering, and XClarity. Datacenter edition is what Storage Spaces Direct requires on the host.
- Migrate when you're ready: Reuse your ThinkAgile MX hardware and deploy Azure Local as a new instance, then move session hosts in waves. Azure Migrate can move Hyper-V VMs onto an Azure Local instance with minimal downtime, though it's still in preview. Microsoft also documents rebuilding a cluster on the same hardware as Azure Local. Check current guidance for your Windows Server version first.
- Plan your licensing path: Azure Local can be licensed with a one-time Integrated OEM License from Lenovo, a monthly subscription, or Azure Hybrid Benefit where your Windows Server licenses are eligible. Confirm eligibility with Microsoft. The OEM license is offered at point of sale only and stays with the hardware, so raise it when you configure.
- One support relationship: Premier Support covers the hardware either way, and on Azure Local it includes integrated Level 1 and Level 2 software support.

Windows Server HCI is a first step. The following table shows what the migration adds and what to plan for.

Table 1. What you gain, and what changes, on AVD on Azure Local

Capability	AVD Hybrid on Windows Server HCI	AVD on Azure Local	What changes
Host platform	Supported on-premises virtualization platform	Azure Local 24H2	Gain: one Azure-integrated stack Plan for: Azure Local as the platform
Session host OS	Windows Server 2025 multi-session, Windows 11 single-session	Windows Server 2025, Windows 11 single-session and multi-session	Gain: Windows 11 multi-session
Adding session hosts	Build VMs with your own tools, then install the Arc agent and AVD extension	Add hosts from the Azure portal with Azure Marketplace images	Gain: portal-driven deployment and fresh images
Power management	No autoscale or Start VM on Connect	Start VM on Connect supported	Gain: hosts start on demand
Billing	AVD Hybrid per-user service license, plus eligible RDS licensing for Windows Server hosts	Per active vCPU fee, plus the Azure Local service fee	Plan for: new meters. Azure Local host licensing options vary; confirm with Microsoft
Host pools	Arc-enabled hosts on any platform	Azure Local hosts only, not mixed with Azure hosts in one pool	Plan for: one host pool per platform

Unchanged: Windows App, Azure-hosted brokering, FSLogix profiles on S2D, ThinkAgile MX nodes, and Premier Support. Supported versions are Windows Server 2025 and Azure Local 24H2. Microsoft updates features and pricing often, so confirm current support, including scaling plans, before you plan the move.

Software you can order with ThinkAgile MX

Lenovo sells the core Microsoft software for this design with the node, so hardware, operating system, and support can come on one order. The table shows what each item covers and how you buy it.

Table 2. Software listing and how to order

Software	What it covers	How you order it	Good to know
Windows Server 2025 Datacenter	Host OS for Windows Server HCI and guest OS for session hosts	Factory installed with the node or as a ROK kit, with add-on core licenses at point of sale	Unlimited VMs when all cores are licensed. OEM licenses stay with the original hardware
RDS CALs	One per user or device connecting to a session host	Ordered with the node or later, by user or device	Use eligible RDS CALs with active Software Assurance, or RDS User Subscription Licenses. Confirm user entitlement and AVD Hybrid service licensing with Microsoft.
Azure Local Integrated OEM License	Azure Local host OS plus Windows Server 2025 Datacenter guest rights	Point of sale in the Lenovo configurator, priced per core	Bought once, and Lenovo bills and supports it. No Azure Hybrid Benefit, and no future Windows Server versions

Software	What it covers	How you order it	Good to know
Azure Local subscription	Azure Local host OS, billed monthly	Through Lenovo as a Microsoft CSP in some regions, or through other CSPs and the Azure portal	Guest Windows Server licenses are separate
Azure Hybrid Benefit	Eligible Windows Server Datacenter licenses with active Software Assurance, or a Windows Server subscription, can waive the Azure Local host fee	Through your Microsoft agreement or a Windows Server CSP subscription	Bought from Microsoft or a CSP, not with the OEM licenses above. Confirm eligibility with Microsoft
Premier Support	Hardware support plus integrated Level 1 and Level 2 Azure Local software support	Ordered with the node for three, four, or five years	Not available in non-Premier countries

Windows 11 Enterprise, Microsoft 365, and the Azure Virtual Desktop service itself come from Microsoft or a CSP. Confirm that RDS CALs ordered through Lenovo meet the Software Assurance requirement before you quote them. Windows Server 2025 Datacenter is listed as an option on the MX650 V4, so confirm MX630 V4 and MX650a V4 availability, part numbers, and country terms in the Lenovo configurator (DCSC).

Rapid delivery with Lenovo Top Choice Express

Standard configure-to-order procurement can take weeks, which works against branch rollouts and seasonal capacity. Lenovo Top Choice Express is a curated configure-to-order program built from components Lenovo keeps in stock, with a goal of shipping within 10 business days, compared with the multi-week lead times typical of standard CTO.

Top Choice Express covers Lenovo's top-selling server lines, with preset configurations you can still customize and instant pricing. Ask your Lenovo representative which ThinkAgile MX650 V4, MX630 V4, and MX650a V4 configurations qualify. Hardware delivery, not AVD Hybrid setup, is often the real constraint on a desktop project, because host registration can follow quickly once the nodes are racked and Arc-connected.

Uses Cases

This solution fits wherever you want on-premises multi-session economics with cloud-managed delivery. The three scenarios below build on one another.

- Headquarters multi-session desktop replacement.
- Branch-office and edge-site desktops under one control plane.
- Seasonal and task-worker burst capacity.

All three share one Azure-managed host pool, workspace, and Windows App experience, so you can start with one and add the others without redesign.

Headquarters multi-session desktop replacement

An organization retires an aging, self-managed RDS deployment. It stands up an MX650 V4 cluster hosting Windows Server 2025 Datacenter session host VMs, registers them through Azure Arc to a new AVD Hybrid host pool, and moves users over in waves. IT retires the on-premises broker and gateway, and confirms RDS licensing with Microsoft. Compute, profiles, and data stay on hardware and a network the organization controls. Engineering or imaging teams can land on MX650a V4 nodes in the same host pool structure.

Branch-office and edge-site desktops under one control plane

A retailer, healthcare network, or bank needs desktops at dozens of sites, each too small for its own broker or VDI stack. An MX630 V4 cluster at each site, with as few as two nodes, runs right-sized RDSH hosts registered to the same host pools and workspace as headquarters. IT manages every site from one Azure Virtual Desktop console, and each site keeps working on local traffic and file access.

Seasonal and task-worker burst capacity

A business with seasonal or shift-based demand, such as tax season, a retail peak, or call-center surges, can add temporary multi-session capacity on its existing MX650 V4 or MX630 V4 clusters instead of provisioning and retiring cloud VMs. Confirm licensing for temporary users with Microsoft first, because user entitlement and RDS licensing apply to them too.

What We Deliver

The solution covers the workloads organizations typically consolidate onto Remote Desktop Session Host:

- **Full multi-session desktops**: a complete Windows Server 2025 Datacenter desktop for knowledge workers, shared workstations, and task roles.
- **Published RemoteApps**: individual line-of-business apps without a full desktop, which shrinks the attack surface.
- **GPU-accelerated desktops**: MX650a V4 brings up to four double-wide GPUs to CAD, imaging, and other graphics-heavy session hosts.
- **User profile continuity**: FSLogix profile containers live on the cluster's S2D volumes or your existing file services, so users get the same profile on any host or site.

Architectural Flexibility to Match Different User Populations

User populations differ. Some sites need maximum density, others a small resilient footprint, some need GPUs, and many need all three. The ThinkAgile MX portfolio covers them with dense, distributed, GPU-accelerated, and hybrid models.

- **Dense Deployment: Optimized for Maximum User Density**. An MX650 V4 cluster scales to sixteen nodes with ten NVMe drives each in the validated configuration. Compute and S2D capacity

grow together, keeping the footprint low for a large central population.

- **Distributed Deployment: Optimized for Branch and Edge Reach**. The MX630 V4's 1U footprint and lower power draw suit branches, retail, and edge sites with tight rack space, in clusters as small as two nodes.
- **GPU-Accelerated Deployment: Optimized for Graphics-Intensive Users**. MX650a V4 supports up to four double-wide GPUs per node in 2U, so engineers and designers get GPU-backed session hosts under the same host pool structure and XClarity management.
- **Hybrid Deployment: Optimized for Mixed Estates**. Most organizations mix MX650 V4 at the data center, MX630 V4 at branches, and MX650a V4 where graphics matter, all managed from one AVD workspace.
- **Platform Flexibility: Windows Server HCI Today, Azure Local Tomorrow**. Run Windows Server 2025 Datacenter HCI now and migrate to AVD on Azure Local later, without changing the node family.

Whichever model you choose, Azure manages the broker, client experience, and policy layer the same way, and Lenovo fits the hardware to each site.

Business Outcome

This solution changes where IT spends its desktop effort. Broker and gateway operations move to Azure, while compute and licensing stay on-premises under your control.

- **Lower cost per concurrent user:** Windows Server 2025 multi-session serves more users per core than per-VM Windows 11 single-session, though licensing and sizing need validating.
- **A modern client without a cloud migration**: Users get the same Windows App experience as cloud-hosted AVD while compute and data stay on-premises.
- **Less to operate**: Azure runs and patches the broker, gateway, and workspace tier, and the hyperconverged cluster removes the separate SAN.
- **Investment protection**: ThinkAgile MX hardware carries forward from Windows Server HCI to Azure Local.
- **One hardware family for every access strategy**: The same nodes run Windows Server multi-session RDSH and Windows 11 single-session, with one firmware baseline and one support relationship.
- **A path to AVD on Azure Local**: Start on Windows Server HCI and migrate on your timeline to gain portal-driven host deployment and Start VM on Connect, with a licensing path chosen to fit.
- **GPU performance where it counts**: MX650a V4 brings up to four double-wide GPUs to the users who need them, without a separate workstation environment.
- **Delivery that matches the business need**: Top Choice Express can ship eligible configurations in as few as 10 business days, so rollouts happen when the business needs them.

Conclusion

AVD Hybrid, generally available since September 1, 2026, is a third option between staying fully on-premises and moving fully to the cloud: a cloud-managed control plane with session hosts that stay where your data and network already are.

Lenovo supplies the on-premises half with ThinkAgile MX650 V4, MX630 V4, and MX650a V4, sized for headquarters, branches, and GPU-heavy workloads. They run Windows Server 2025 Datacenter RDSH with eligible RDS licensing or, on the same hardware, Windows 11 Enterprise single-session hosts. Start on Windows Server HCI and migrate to AVD on Azure Local when you're ready, backed by XClarity, Premier Support, and Top Choice Express, which can ship eligible configurations in as few as 10 business days.

For More Information

Please refer to our Smart Design Guide for High level architecture, licensing, planning and sizing information.

https://view-su2.highspot.com/viewer/b8f16b3c863b5653df09a2f647a8071d#1

To learn more about AVD Hybrid and AVD on Azure Local with Windows Server 2025 Datacenter on Lenovo ThinkAgile MX, contact your Lenovo representative or Lenovo Business Partner, or use the resources below.

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Related product families

Product families related to this document are the following:

- ThinkAgile MX Series for Microsoft Azure Local

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